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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant(s) : Takashi KOHASHI et al.
Serial No. : 09/510,438
For : ADDITIONAL INFORMATION EMBEDDING METHOD,
ADDITIONAL INFORMATION DETECTING METHOD,
ADDITIONAL INFORMATION EMBEDDING APPARATUS
AND ADDITIONAL INFORMATION DETECTING
APPARATUS
Filed : February 21, 2000
Examiner : Gurshman, Grigory
Art Unit : 2132

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APPEAL BRIEF OF APPELANTS

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an appeal from the Final Rejection by the Examiner dated May 3, 2004, in which claims 1-18 were rejected, and the Advisory Action dated August 17, 2004. This brief is

accompanied by the requisite fee set forth in 37 C.F.R. §1.17(c). This brief is submitted in triplicate as required by 37 C.F.R. §1.192(a).

REQUEST FOR AN ORAL HEARING

An oral hearing is requested.

REAL PARTY IN INTEREST

The real party in interest is Sony Corporation, a Japanese corporation with offices at 7-35 Kitashinagawa 6-Chome, Shinagawa-Ku, Tokyo, Japan, Pioneer Corporation with offices at 4-1 Meguro 1-Chome, Meguro-Ku, Tokyo, Japan and Hitachi, Ltd. with offices at 6, Kanda Surugadai 4-Chome, Meguro-Ku, Tokyo, Japan to which appellants have assigned all interest in, to and under this application, by virtue of an assignment recorded on June 5, 2000 at reel 010883, frame 0922 of the assignment records of the Patent and Trademark Office.

RELATED APPEAL AND INTERFERENCE

Upon information and belief, there are no other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

STATUS OF CLAIMS

The application was filed on February 21, 2000. Foreign priority benefits under 35 U.S.C. §119 were claimed based on Japanese application 11-043383 (filed on February 22, 1999).

In an Office Action dated January 15, 2004, claims 1-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Vynne (U.S. Patent No. 5,960,081) in view of Cohen (U.S. Patent No. 6,389,032 B1).

In a response to the Office Action filed April 15, 2004, appellants did not amend any claims. Instead, arguments were presented to overcome the §103 rejection.

In a Final Office Action dated May 3, 2004, claims 1-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Vynne (U.S. Patent No. 5,960,081) in view of Cohen (U.S. Patent No. 6,389,032 B1).

In a response to the Final Office Action filed July 6, 2004, appellants amended claims 1, 5, 9, 12 and 16 as they now appear in the Appendix.

In an Advisory Action dated August 17, 2004, the Examiner indicated that the response filed July 6, 2004 was considered. Nevertheless, the Examiner asserted that the response did not place the application in condition for allowance, and the Examiner maintained the rejection of claims 1-18.

In a response to the Advisory Action, appellants filed a Notice of Appeal on September 3, 2004.

The status of the claims are as follows:

Claims allowed: none

Claims objected to: none

Claims rejected: 1-18

The rejected claims 1-18 are set forth in the Appendix attached hereto.

The rejected claims are being appealed.

STATUS OF THE AMENDMENTS

The Examiner indicated that the claim amendments included in the response filed on July 6, 2004 would be entered for purposes of Appeal. The Examiner asserted that the amendments did not place the application in condition for allowance. The Examiner maintains his prior art rejections.

SUMMARY OF THE INVENTION

The present invention is directed toward an embedding apparatus and method for embedding a plurality of additional information on a video signal as watermark information (page 1, lines 8-14) for the purpose of preventing users from making unauthorized copies of digital contents (page 1, lines 17-24). The additional information embedded on the signal as watermark information is made up of plural pieces, each having corresponding significance, and an indication of the significance of each piece of information is provided so that higher significance degrees can be more readily detected (page 4, line 20 to page 5, line 3 and page 11, lines 14-23). The embedding part of the video signal that is used for the watermark information associated with a given piece of additional information is sized according to the significance degree of the piece.

ISSUES

Whether or not claims 1-18 are unpatentable under 35 U.S.C. §103(a) as being obvious in view of Vynne (U.S. Patent No. 5,960,081) and Cohen (U.S. Patent No. 6,389,032 B1).

GROUPING OF CLAIMS

It is appellants' intention that claims 1-18 be grouped together so that they stand or fall together.

ARGUMENT

Whether or not claims 1-18 are unpatentable under 35 U.S.C. §103(a) as being obvious in view of Vynne (U.S. Patent No. 5,960,081) and Cohen (U.S. Patent No. 6,389,032 B1).

Appellants' invention as recited in the independent claims is directed toward an additional information embedding apparatus and method, and an additional information detecting apparatus and method. Specifically, plural pieces of additional data of different significance levels and different sizes are embedded within a video signal as watermark information. Each of the claims recites that the size of the embedded watermark information is controlled according to the significance level of the corresponding additional data. For example, claim 1 recites in pertinent part: "controlling the size of a embedding part of a video signal for each of said electronic watermark information in accordance with the significance degree of the corresponding additional information."

Neither Vynne nor Cohen discloses controlling the size of a embedding part of a video signal for each of the electronic watermark information in accordance with the significance degree of the corresponding additional information.

Vynne simply states that the inputs to the embedding part 214 are a motion picture signal 213, a signature 217 and a secret key 219 (column 12, lines 1-4), and thus merely describes the various pieces of additional information that are embedded onto a signal. Vynne does not teach or suggest controlling the size of an embedding part of a watermark, let alone controlling the size of an embedding part of a watermark based on the significance degree of corresponding

additional data. Indeed, the Examiner admits that Vynne: “does not explicitly teach controlling the size of the embedding part of the watermark.” (paragraph 7 of the present Final Office Action).

Cohen, discloses that jitter is calculated as the difference between the current size of a buffer and the size of the buffer in a previous invocation of the update procedure and if the jitter is relatively small, for example, less than half of the watermark size, then the watermark size may be reduced as indicated in block 108, preferably to about twice the size of the jitter (column 6, lines 6-56). As a result, the size of the buffer changes in accordance with the size of the watermark and not in accordance with a significance degree of the corresponding additional information, as instantly claimed.

Therefore, neither Vynne nor Cohen discloses controlling the size of a embedding part of a video signal for each of the electronic watermark information in accordance with the significance degree of the corresponding additional information. Accordingly, Appellants’ believe that claims 1, 5, 9, 12 and 16 are patentable over Vynne and Cohen – taken either alone or in combination – on at least this basis.


Claims 2-4, 6-8, 10, 11, 13-15, 17 and 18 are dependent from one of the independent claims, and due to such dependency, are believed to be distinguishable from Vynne and Cohen for at least the reasons previously described.

CONCLUSION

Claims 1-18 are not obvious in view of the applied combination of Vynne and Cohen. Accordingly, it is respectfully submitted that the Examiner erred in rejecting claims 1-18 and a reversal of such rejections by this Honorable Board is solicited.

Respectfully submitted,

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APPENDIX

1. An additional information embedding apparatus for embedding plural pieces of additional information having different significance degrees on a signal, comprising:

means for generating said plural pieces of additional information;

electronic watermark information generating means for converting said plural pieces of additional information into electronic watermark information;

control means for controlling the size of a embedding part of a video signal for each of said electronic watermark information in accordance with the significance degree of the corresponding additional information; and

embedding means for embedding said electronic watermark information on said video signal based on a control signal from said control means.

2. The additional information embedding apparatus according to claim 1, wherein:

said signal is a video signal; and

said control means controls said embedding means so that each of said electronic watermark information is embedded within a one-frame screen or a one-field screen of said video signal, and that a embedding part for electronic watermark information indicating additional information having a higher significance degree is set to be larger in size.

3. The additional information embedding apparatus according to claim 1, wherein:

said signal is a video signal; and

said control means controls said embedding means so that each of said electronic watermark information is embedded on a one- or plural-frame basis of said video signal or on

one- or plural-filed basis of said video signal, wherein a embedding part for electronic watermark information indicating additional information having a higher significance degree is set to occupy a larger number of frames or a larger number of fields which constitute said embedding part.

4. The additional information embedding apparatus according to claim 1, wherein said embedding means embeds said plural pieces of electronic watermark information having different significance degrees are embedded on said video signal at embedding levels equal to one another.

5. An additional information embedding apparatus comprising:
a plurality of additional information generating means for generating additional information having different significance degrees;

a plurality of electronic watermark information generating means provided correspondingly to said plurality of additional information generating means for generating plural pieces of electronic watermark information from said additional information obtained by said additional information generating means;

combining means for combining said plural pieces of electronic watermark information obtained by said plurality of electronic watermark information generating means while they are assigned to separate embedding parts;

combination timing signal generating means for producing a combination timing signal used for controlling a combination timing of said combining means so that the size of the embedding part of a video signal for each of said plural pieces of additional information having

different significance degrees is set in accordance with the significance degree of the corresponding additional information; and

embedding means for embedding the combined electronic watermark information obtained by said combining means, on said video signal.

6. The additional information embedding apparatus according to claim 5, wherein said combination timing signal generating means generates said combination timing signal so that said plural pieces of the electronic watermark information from said plurality of electronic watermark information generating means are embedded within a one-frame or one-field screen of said video signal, and that a embedding part for electronic watermark information indicating additional information having a higher significance degree is set to be larger in size.

7. The additional information embedding apparatus according to claim 5, wherein said combination timing signal generating means generates said combination timing signal so that said plural pieces of electronic watermark information obtained by said plurality of electronic watermark information generating means are embedded with one or plural frame(s) of said video signal or on one or plural field(s) of said video signal as a embedding part unit, and that a embedding part for electronic watermark information indicating additional information having a higher significance degree is set to occupy a larger number of frames or a larger number of fields which constitute said embedding part.

8. The additional information embedding apparatus according to claim 5, wherein

said plural pieces of electronic watermark information respectively indicating said plural pieces of additional information having different significance degrees are embedded on said video signal at embedding levels equal to one another.

9. An additional information detecting apparatus for detecting plural pieces of additional information from a video signal on which said plural pieces of additional information are embedded as electronic watermark information, wherein:

said plural pieces of electronic watermark information respectively indicating said plural pieces of additional information are separately embedded in embedding parts, and the size of each embedding part of a video signal is set in accordance to the significance degree of the corresponding additional information; and

said additional information detecting apparatus comprises:

detecting means for detecting additional information as electronic watermark information from said each embedding part of said video signal which is set in accordance with the significance degree of said corresponding additional information; and

detection timing signal generating means for producing a detection timing signal used for detecting additional information and supplying it to said detecting means, for said each embedding part of said video signal which is set in accordance with the significance degree of said corresponding additional information.

10. The additional information detecting apparatus according to claim 9, wherein in the case where said signal is a video signal, said plural pieces of electronic watermark information respectively indicating said plural pieces of additional information

having different significance degrees are embedded within a one-frame or one-field screen of said video signal, and the embedding parts for said plural pieces of electronic watermark information respectively indicating said plural pieces of additional information are set in such a manner that an embedding part for electronic watermark information indicating additional information having a higher significance degree is set to be larger in size in said one-frame or one-field screen.

11. The additional information detecting apparatus according to claim 9, wherein in the case where said signal is a video signal, said plural pieces of electronic watermark information respectively indicating said plural pieces of additional information having different significance degrees are embedded on a one- or plural-frame basis of said video signal or on a one- or plural-field basis of said video signal, and an embedding part for electronic watermark information indicating additional information having a higher significance degree is set to occupy a larger number of frames or a larger number of fields which constitute said embedding part.

12. An additional information embedding method of embedding plural pieces of additional information having different significance degrees on a video signal, comprising:
a step of generating said plural pieces of additional information;
an electronic watermark information generating step of converting said plural pieces of additional information into electronic watermark information;

a control step of controlling the size of a embedding part of a video signal for each of said plural pieces of electronic watermark information in accordance with the significance degree of the corresponding additional information; and

a embedding step of embedding said plural pieces of electronic watermark information on said video signal based on a control signal from said control step.

13. The additional information embedding method according to claim 12, wherein:

said signal is a video signal; and

said control step controls said embedding step so that each of said plural pieces of electronic watermark information is embedded within a one-frame or one-field screen of said video signal and that a embedding part for electronic watermark information indicating additional information having a higher significance degree is set to be larger in size.

14. The additional information embedding method according to claim 12, wherein:

said signal is a video signal; and

said control step controls said embedding step so that each of said plural pieces of electronic watermark information is embedded on a one- or plural-frame basis or a one- or plural-field basis of said video signal, and that a embedding part for electronic watermark information indicating additional information having a higher significance degree is set to occupy a larger number of frames or a larger number of fields which constitute said embedding part.

15. The additional information embedding method according to claim 12, wherein said embedding step embeds said plural pieces of electronic watermark information having different significance degrees on said video signal at embedding levels equal to one another.

16. An additional information detecting method of detecting plural pieces of additional information from a video signal on which said plural pieces of additional information are embedded as electronic watermark information, wherein:

said plural pieces of electronic watermark information respectively indicating said plural pieces of additional information are separately embedded in respective embedding parts, and the size of each embedding part of a video signal is set in accordance with the significance degree of the corresponding additional information; and

said additional information detecting method comprises:

a detecting step of detecting additional information indicated by electronic watermark information, from said each embedding part of said video signal which is set in accordance with the significance degree of said corresponding additional information; and

a detection timing signal generating step of generating a detection timing signal for detecting said additional information and supplying it to said detecting step, for said each embedding part of said video signal which is set in accordance with the significance degree of said corresponding additional information.

17. The additional information detecting method according to claim 16, wherein in the case where said signal is a video signal, each of said plural pieces of electronic watermark information respectively indicating said plural pieces of additional information having different significance degrees is embedded within a one-frame or one-field screen of said video signal, and embedding parts for said plural pieces of electronic watermark information respectively indicating said plural pieces of additional information are set in such a manner that a embedding part for electronic watermark information indicating additional information having a higher significance degree is set to be larger in size in said one-frame or one-field screen.

18. The additional information detecting method according to claim 16, wherein in the case where said signal is a video signal, each of said plural pieces of the electronic watermark information indicating said plural pieces of additional information having different significance degrees is embedded with one or plural frame(s) or one or plural field(s) of said video signal as a embedding part unit, and a embedding part for embedding electronic watermark information indicating additional information having a higher significance degree is set to occupy a larger number of frames or a larger number of fields which constitute said embedding part.